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Spaceport News

John F. Kennedy Space Center - America's gateway to the universe

www.nasa.gov/centers/kennedy/news/snews/spnews_toc.html

INSIDE . . .

U.S. Labor, Commerce efforts to help transition

By Linda Herridge
Spaceport News

A $15 million grant from the Department of Labor and efforts by the Space Industry Task Force to bring more high-technology jobs to Florida, are just two of the efforts recently implemented to help Kennedy Space Center workers who will be affected by the retirement of NASA's Space Shuttle Program.

Secretary of Labor Hilda Solis made the grant announcement at the Kennedy Space Center Visitor Complex on June 2 with NASA Deputy Administrator Lori Garver and Rep. Suzanne Kosmas of Florida. The grant will assist approximately 3,200 ASRC Aerospace Corp., Boeing and United Space Alliance workers, and is in addition to the $40 million of Recovery Act funds pledged by President Barack Obama during his visit to the center April 15.

"During nearly three decades of continuous space shuttle flights, these dedicated and talented workers have helped move our nation -- and the world as a whole -- forward in a broad range of disciplines," Solis said. "Today, these hard-working Americans need and deserve our support, and I am pleased that this grant will allow them to upgrade their skills further and gain access to work opportunities in high-demand industries."

The grant will be awarded to The Brevard Workforce Development Board Inc., which will serve as the program operator. Funds will help individuals ranging from entry-level workers to highly skilled professionals. Services will include career guidance, job search skills, resume reviews, skill assessments and labor market information, as well as training and continuing education opportunities.

"We must take every step possible to maintain the Space Coast's highly skilled work force, and this grant will provide critical support to workers and help them find new job opportunities in our community," said Rep. Suzanne Kosmas. "At the same time, I will continue working to minimize the human spaceflight gap and attract new businesses to the Space Coast in order to strengthen and diversify our economy."

On June 4, Commerce Secretary Gary Locke and NASA Administrator Charlie Bolden, co-chair of the Presidential Task Force on Space Industry Work Force and Development, held a town hall meeting in Orlando to hear directly from local leaders about ways to strengthen the work force.

Meeting moderator and Space Florida President Frank DiBello said it's vital to preserve and refresh key Kennedy and Cape Canaveral Air Force Station assets that are essential to the nation's space future. Other panel members were Assistant Secretary of Commerce for Economic Development John Fernandez, Rep. Alan Grayson of Florida, and NASA Associate Administrator for Mission Support Woodrow Whitlow.

Locke discussed the president's commitment to job creation and strengthening of the economy with the launch of the presidential task force and its $40 million for multiagency initiatives for regional and economic growth.

"We are committed to this region," Locke said. "We're developing a very ambitious and targeted plan to revitalize the Space Coast region."

Locke said the president is ensuring that Kennedy and all of NASA have the resources they need to pursue new avenues of discovery.

He also said the task force will be working closely with colleagues throughout the federal government and local leaders to expand the region's economic base, to identify emerging opportunities and to ensure that the region's aerospace workers have the training and the resources they need to be an integral part of the region's new economic strategy.

Once the task force has gathered the best ideas from throughout the region, Locke said they will owe the president an action plan by Aug. 15 on how the $40 million will be used to further the economic development.

Bolden said the highly skilled civil service and contractor work force team is one of NASA's greatest assets, and their hard work and talents have enabled America to be the world's premier spacefaring nation.

"I am confident that NASA's contributions to the solutions we seek will have wide-ranging benefits for the country and all of Central Florida," Bolden said.

NASA/Rick Wetherington

STS-132, Atlantis return safely

Space shuttle Atlantis and its six astronauts ended a 12-day journey of more than 4.8 million miles with an 8:48 a.m. EDT landing May 26 at Kennedy Space Center. The third of five shuttle missions planned for 2010, this was the last scheduled flight for Atlantis.

The mission, designated STS-132, delivered the Russian-built Mini Research Module-1 to the International Space Station.

Ken Ham commanded the flight and was joined by Pilot Tony Antonelli and Mission Specialists Garrett Reisman, Michael Good, Steve Bowen and Piers Sellers.

Power, patience persevere during STS-131 mission

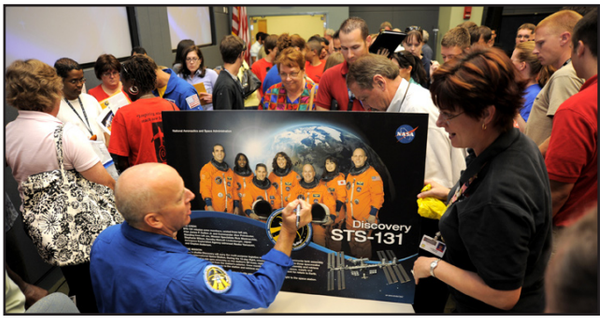
By Rebecca Sprague
Spaceport News

Body builders around the world have every right to envy the crew of STS-131.

In April, Commander Alan Poindexter, Pilot James P. Dutton Jr., and Mission Specialists Rick Mastracchio, Clayton Anderson, Dorothy Metcalf-Lindenburger, Stephanie Wilson and Naoko Yamazaki delivered 6 tons of supplies to the International Space Station . . . and moved all of it by hand.

Five of the crew members stopped by Kennedy Space Center's Operations Support Building II on June 2 to talk about their ride into orbit aboard space shuttle Discovery and their successful 15-day mission.

"Clay actually had to pick this ammonia tank up, its weight about 1,800 pounds," said Poindexter. "He picked it up and held it up over his head."



NASA/Kim Shiflett

STS-131 Commander Alan Poindexter signs a poster during a crew return event in the Operations Support Building II at Kennedy on June 2. The crew launched from Kennedy's Launch Pad 39A aboard space shuttle Discovery on April 5.

Here on Earth, that same ammonia tank was moved around by a large crane during processing in the Space Station Processing Facility. While lifting the tank in space seemed like a synch, even while wearing a 350-pound spacesuit and carrying around an additional 50 pounds of tools, it didn't go into place without a fight. Anderson and Poindexter tried for hours to poke, prod and push the tank into place and Kennedy workers erupted in laughter when Poindexter described the battle.

"Then, Houston came up and said, 'Hey, try it with this little 6-ounce hammer,'" said Poindexter. "So, we tried this 6-ounce hammer on the 1,800-pound tank and, of course, that's not going to help at all."

It eventually took a re-install and whole lot of wiggling to make the tank sit correctly in its place outside the station.

So, how does an astronaut stay physically fit in space to perform that kind of work?

Metcalf-Lindenburger talked about the advanced resistive exercise device being a great way for shuttle and station crew members to stay in shape. She also spoke about how much taller they are in orbit.

"We discovered that we all had about another inch to brag about to our friends on the ground," Metcalf-Lindenburger said.

In their space time, they enjoyed floating and goofing around, messing around with their food, and playing musical instruments and catch. They even taught school children that science works in space, too. And even though their parents weren't up there to nag them about picking up their bedrooms . . . they did it anyway.

"We try to be good stewards of the places that we've been," said Wilson. "So, we do a little bit of housekeeping inside the airlock, making everything neat and tidy, and also in the high-traffic areas since Node 1 is now a common place to have meals."

The shuttle and station crews even celebrated the first-ever "Sushi Party" in Node 1.

"Actually, it was really delicious," Poindexter said. "It tasted pretty much like it would here on the ground."

It was a busy mission for the crew that supplied the space station with vital components and enough science racks and experiments for months to come. They wrapped up their crew return event with some questions and a heartfelt thank you to the Kennedy team that prepared their vehicle for flight.

Constellation Ground Operations completes milestone

More than 1,600 personnel from NASA field centers and industry partners successfully completed a review of the Constellation Program's ground system preliminary designs at Kennedy Space Center on June 2.

The review examined ground systems and operations development progress, ranging from launch pad refurbishment, Vehicle Assembly Building modifications, and mobile launcher construction, to Orion spacecraft and Ares I launch vehicle element assembly and integration. It concentrated on the technical and managerial challenges faced in executing the first major ground system and operations development effort at Kennedy in more than 35 years.

"Progressing to this phase on a project of this magnitude is a tremendous accomplishment," said Dale Thomas, acting manager of the Constellation Program. "It was one of the cleanest design reviews I've witnessed, the result of outstanding work by the Ground Operations Project."

Ground operations development is based upon the evolving knowledge of requirements for launching a human-rated vehicle into space and lessons learned during almost 30 years of launching the space shuttle. One of the goals of the review was to demonstrate progress in reducing ground processing hours, increasing efficiency, improving safety and reducing ground operations costs.

"Because of the early emphasis the Constellation Program placed on making our processing effort more affordable, we were able to embed ground operations expertise into the early flight hardware design trades and come away with a more efficient flight and ground system design," said Pepper Phillips, Ground Operations Project manager.

A preliminary design review is one of a series of reviews performed before NASA builds flight hardware or, in the case of ground operations, builds the ground hardware and facilities infrastructure needed to process and integrate a launch vehicle. The review process serves as a "gate" between development stages of a system and progresses to more detailed parts of the system design, assessing the system to ensure it will meet all NASA requirements for safe and reliable flights.

With the completion of this review, the Ground Operations Project will progress to the detailed design phase for all elements of ground operations and processing. The next key milestone will be the Critical Design Review, where the final designs of the ground operations and processing elements will be reviewed prior to entering integration and testing.

Although the proposed FY2011 budget for NASA cancels the Constellation Program, the agency is continuing to fully comply with provisions of the FY 2010 Consolidated Appropriations Act, which prohibits terminating or eliminating Constellation activities.

NASA/ Troy Cryder

The launch mount of a new mobile launcher, or ML, that could support future human spaceflight now is complete at Kennedy. The construction is taking place in Launch Complex 39 in the mobile launcher park site north of the Vehicle Assembly Building. The new launcher is 355 feet tall and has multiple platforms for personnel access.

Johnson Space Center Public Affairs contributed to this article.

Quartet joins 2010 U.S. Astronaut Hall of Fame class

Astronauts Guion Bluford, Jr., Kenneth Bowersox, Frank Culbertson, Jr., and Kathryn Thornton joined an elite group of American space heroes as they were inducted into the U.S. Astronaut Hall of Fame on June 5 during a ceremony at the Kennedy Space Center Visitor Complex.

As the ninth group of space shuttle astronauts to be named to the hall, the group possesses an impressive resume. Bluford, was the first African-American to fly in space. Ken Bowersox was the pilot of the first maintenance mission to restore NASA's Hubble Space Telescope and later commanded Expedition 6 aboard the International Space Station.

NASA/Jack Pfaller

The 2010 Astronaut Hall of Fame inductees, from left, Guy Bluford Jr., Kathy Thornton, Frank Culbertson Jr. and Ken Bowersox were honored at a ceremony June 5 at Kennedy's Visitor Complex.

He also commanded the STS-82 servicing mission to Hubble. Frank Culbertson Jr. was commander of the first space shuttle night landing at Kennedy and led the third Expedition crew on the space station. Kathy Thornton served as a mission specialist during STS-49, which saw the first three-person spacewalk and later helped repair and upgrade Hubble as a spacewalker on STS-61.

NASA Administrator and hall member Charles Bolden, who attended the outdoor ceremony, called this year's inductees a "special class" of astronauts.

"One of the things that is striking to me in addition to their professional prowess, they are probably four of the most spectacular, just downright good human beings I have had the opportunity to know," Bolden said.

The event, hosted by actor and self-proclaimed space geek Jon Cryer of CBS Television's "Two and a Half Men," had its share of laughs and former astronaut Dick Covey brought the house down during his introduction of Bowersox.

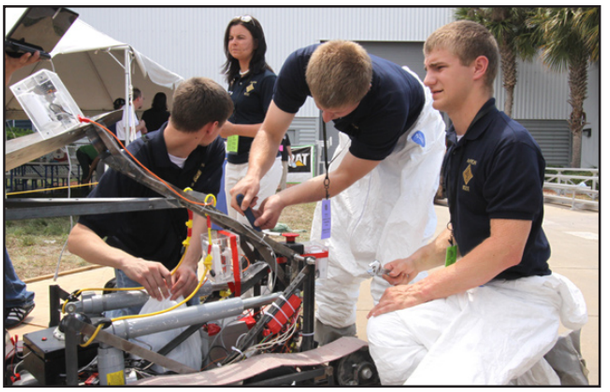
Bluford Jr. was introduced by Johnson Space Center Director Michael Coats. Bolden presented Culbertson. STS-49 Commander Dan Brandenstein praised Thornton during his presentation of her.

Lunabots dig Kennedy's inaugural mining competition

By Linda Herridge
Spaceport News

One thing is certain -- lunabots come in all shapes and sizes, and can have a positive impact on the students who design them. The impact was evident when more than 20 college and university teams from around the country descended on the Kennedy Space Center Visitor Complex's Astronaut Hall of Fame, May 27-28, for NASA's inaugural Lunabotics Mining Competition.

Coordinated and hosted by Kennedy Space Center's Education Programs and University Research Division, the mining competition featured several categories that teams could compete in to accumulate points. These included designing and building a remote-controlled or autonomous excavator, or lunabot, for competition, writing a systems engineering paper, coordinating informal education outreach to K-12 students, a lunabotics mining slide presentation and team spirit.



NASA/Jack Pfaller

University students tune up and tinker with their remote controlled or autonomous excavators, called lunabots, in front of the "Lunarena" at the Kennedy Space Center Visitor Complex's Astronaut Hall of Fame. Twenty-two teams from around the country maneuvered their lunabots in about 60 tons of ultra-fine simulated lunar soil, called BP-1, for NASA's first Lunabotics Mining Competition on May 27-28.

Kennedy Deputy Director Janet Petro welcomed the teams to the final day of competition and encouraged them to concentrate on science, technology, engineering and mathematics, or STEM, disciplines.

"The examples of NASA's presence in the areas of research and development and technology development continue to abound, and the data that is collected is invaluable," Petro said. "Your talents are essential to ensuring an agency such as NASA, whose fundamental objective is exploration, can achieve its full potential."

Lunabotics Mining Competition Project Manager Gloria Murphy said the competition exceeded all expectations.

"The students benefitted from this competition by selecting it as their senior design project, which allowed them to actually design and build something," Murphy said.

When the lunar dust settled, several teams rose to the top, including Montana State University with their Modular Unmanned Lunar Excavator, or M.U.L.E., lunabot. The team won first place in the mining category and $5,000 in scholarships, for successfully maneuvering the M.U.L.E. around a rock-filled course, digging to collect the most lunar simulant, about 46 pounds, and depositing it in a container within 15 minutes.

"It was an incredible moment for the team," said Dr. Brock LaMeres, the team's faculty advisor. "Winning the digging contest was surreal considering the caliber of the other schools that participated."

The team also won the Joe Kosmo Award for Excellence for achieving the most cumulative points. They received a school trophy, individual certificates, Kennedy VIP launch invitations and travel expenses to participate in a NASA Desert RATS field test activity.

"The team decided from day one that they wanted to compete for the Joe Kosmo award. They studied the requirements and did everything they could to accumulate points in each of the categories," LaMeres said. "We are definitely planning to participate next year."

Team AETHER from Embry Riddle Aeronautical University in Daytona Beach received the outreach award for their lunabot, Kraken.

According to the team's faculty advisor, Charles Reinholtz, they interacted with a local fifth-grade class and helped run the regional and state For the Inspiration and Recognition of Science and Technology, or FIRST, Technical Challenge Competition.

The students visited Mainland and Spruce Creek High Schools, mentored the Spruce Creek Robotics team and helped fabricate components for them.

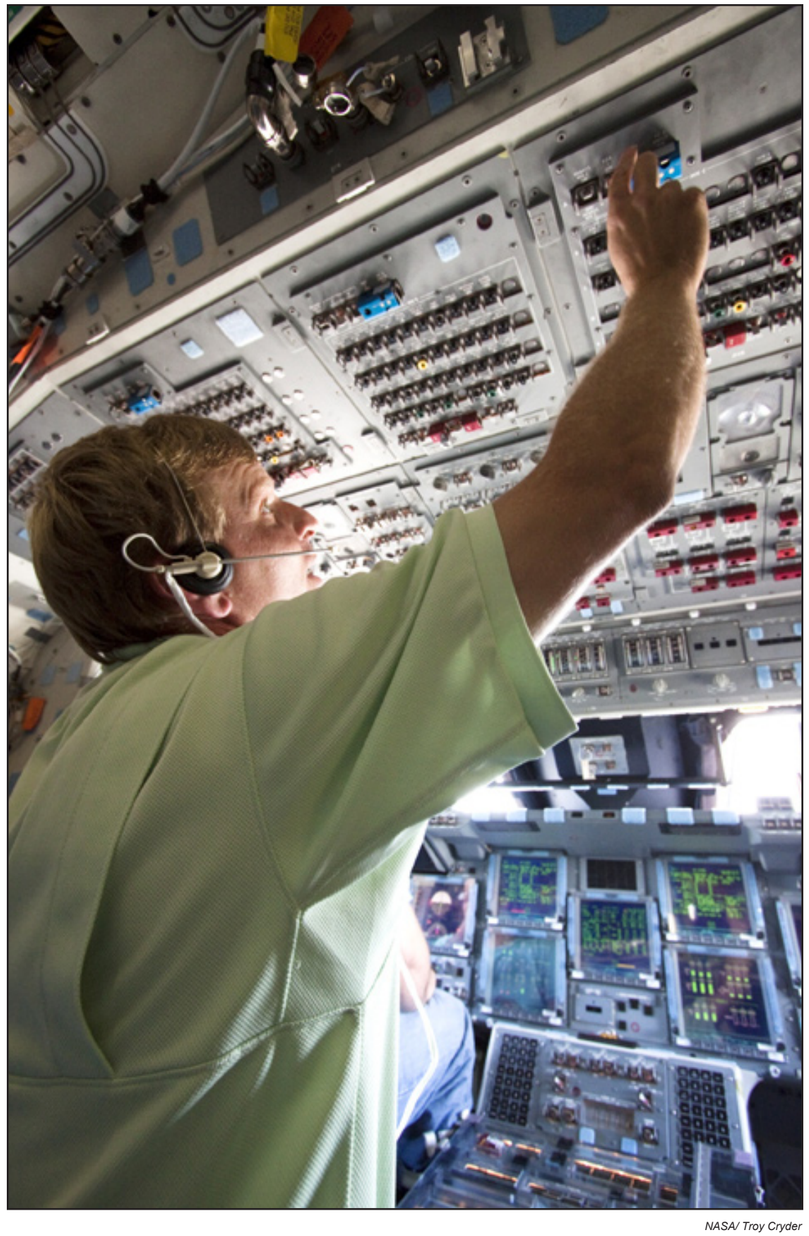
"They took it one step further by inviting a local high school student to participate on the lunabot team," Reinholtz said.

Murphy said outreach is an important component of the competition, because it's vital to encourage and mentor the younger generation.

Reinholtz said most engineering students today

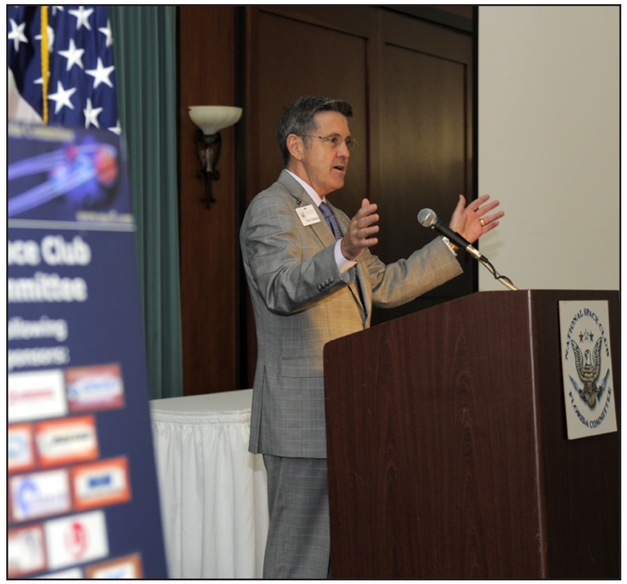
See **LUNABOTICS**, Page 6

Scenes Around Kennedy Space Center



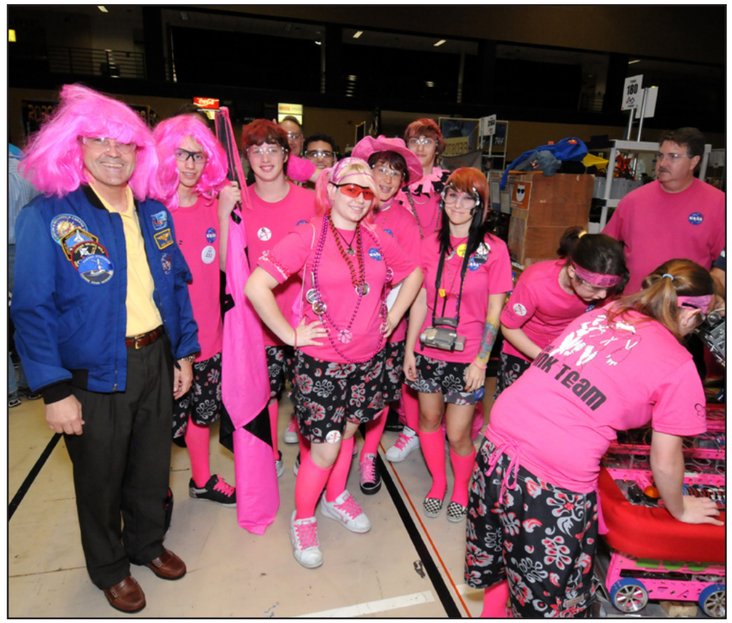
NASA/ Troy Cryder

Inside shuttle Atlantis' crew compartment, a United Space Alliance employee begins to power down the vehicle for towback from the Shuttle Landing Facility runway to Orbiter Processing Facility-1 at Kennedy on May 26. After every shuttle landing, about 150 trained workers assist the crew out and then make the vehicle safe for towing atop a large diesel-driven tractor.



NASA/Kim Shiflett

Center Director Bob Cabana addresses the National Space Club Florida Committee at its monthly meeting June 8 at the Radisson at the Port in Cape Canaveral, Fla. His speech, titled "KSC -- Today and Tomorrow," addressed possible changes to the space shuttle launch schedule later this month. He also added that while low Earth orbit may gradually be turned over to the private sector, international partners have shown interest in cooperating in going beyond low Earth orbit with NASA leading the way. He said NASA will need to develop new propulsion systems for crews to go to Mars. He added that he hopes Kennedy eventually can be made the ultimate home for all future commercial and government launch endeavors. "We want to launch it all," Cabana said.



For NASA

Center Director Bob Cabana is an honorary member of the "Pink Team," shown above, during the FIRST regional robotic competition in March at the University of Central Florida arena. Comprised of students from Rockledge, Viera and Cocoa Beach, the group had six weeks to design and build a robot to perform particular objectives. The "Pink Team" was a division winner in the Archimedes Division during the World Championships in April at the Georgia Dome in Atlanta with a robot that was a cross between a soccer player and foosball. For more on the Pink Team, go to, **http://thepinkteam.org/**.

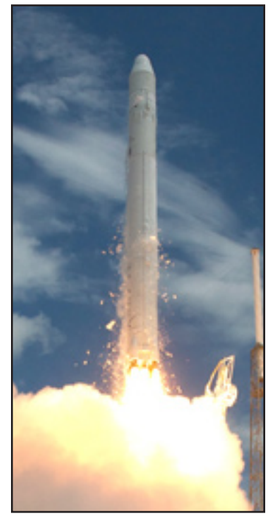
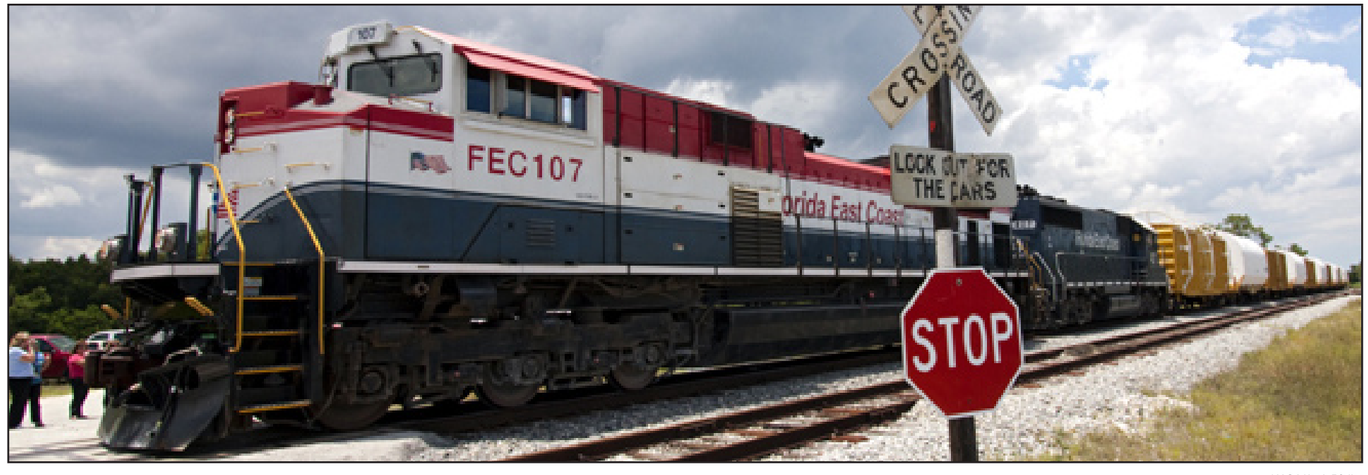


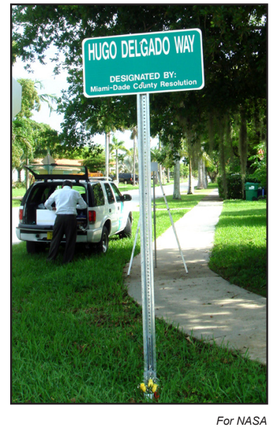
Photo courtesy of ChrisThompson/SpaceX

SpaceX launched its Falcon 9 test rocket at 2:45 p.m. EDT on June 4 from Cape Canaveral Air Force Station's Launch Complex-40. According to SpaceX, the Dragon spacecraft mock-up reached orbit.



NASA/Jack Pfaller

A train delivers the last space shuttle solid rocket booster segments to the Jay Jay Rail Yard in Titusville, Fla., on May 27. Six Florida East Coast Railway cars transported the segments on their cross-county journey from the ATK solid rocket booster plant in Promontory, Utah. NASA senior managers and astronaut Mike Massimino hopped aboard the train in Jacksonville, Fla., for the final leg of the trip. The booster segments will be used for shuttle Atlantis on what currently is planned as the "launch on need," or potential rescue mission for the final scheduled shuttle flight, Endeavour's STS-134 mission.



For NASA

A portion of Southwest 107th Court in Miami was designated Hugo Delgado Way in memory of his contributions to the community, his family and NASA. Hugo Delgado was born in Cuba and moved to the United States in 1964. He attended Coral Way Elementary School, Shenandoah Middle School, Miami Senior High, and the University of Miami, where he received his degree in electrical engineering. Delgado began his career at Kennedy in 1979, and was the chief of the Electrical Division of the Engineering Directorate.

Season begins for hurricanes, tornadoes, thunderstorms

Florida summers are known for their dynamic weather. It means the start of the Atlantic hurricane season and the onset of afternoon thunderstorms that bring with them copious amounts of rain, lightning and even tornadoes.

Kennedy Space Center employees attended hurricane awareness training in the Training Auditorium on June 1 to prepare for this year's season.

The presentation, hosted by NASA Emergency Manager Wayne Kee, featured Brevard County Emergency Management Director Bob Lay, 45th Space Wing Shuttle Weather Officer Kathy Winters, and John Cosat, chief of Space Gateway Support's emergency management team.

The 45th Weather Squadron provides general information concerning the development of a storm, including intensity, direction and speed of movement. This information is used to determine the appropriate hurricane condition, also known as HURCON.

The center director and commander of 45th Space Wing jointly declare hurricane conditions based on the arrival of hurricane-associated winds of 58 mph or greater. Kennedy's Hurricane Management Team recommends to the center director the announcement of a HURCON. The condition simply indicates how soon to expect the storms force to affect this area, as follows:

Hurricane Condition IV: Expected to reach Kennedy within 72 hours.

Hurricane Condition III: Expected to reach Kennedy within 48 hours.

Hurricane Condition II: Expected to reach Kennedy within 24 hours.

Hurricane Condition I: Expected to reach Kennedy within 12 hours.

If the hurricane is within 24 hours of Kennedy, or HURCON II, and it is a category 2 or higher, the center likely will be evacuated.

Along with hurricanes, there are several other severe weather factors workers should keep in mind.

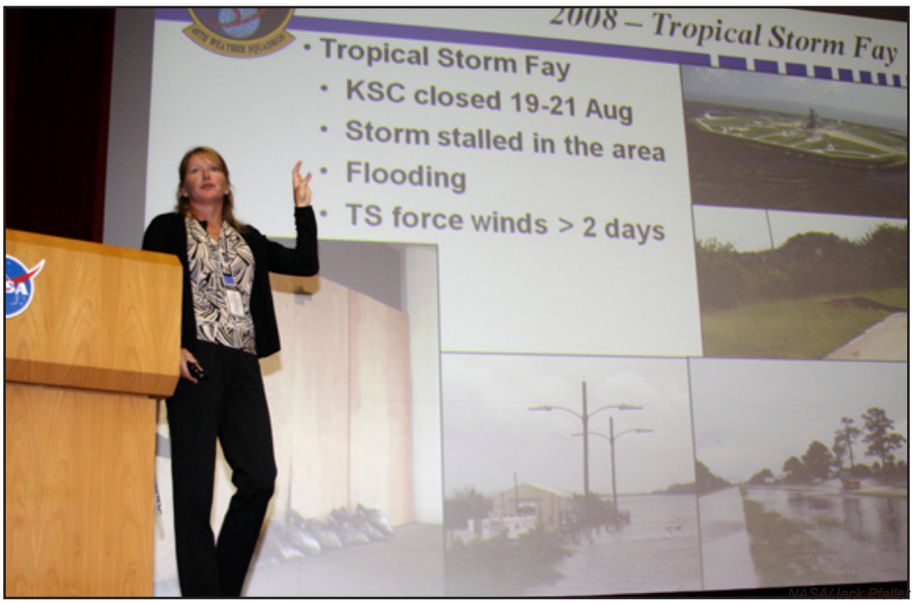
Tornado safety is an easy two-step process.

Step No. 1, Have A Plan: Identify the safest room in your building and ensure everyone knows where it is located.

The safest rooms are on the lowest floor, away from windows, farther inside and smaller with solid construction.

People in mobile homes or other weak portable buildings should seek proper shelter elsewhere.

Also, a common myth is to open windows and let the building "breathe." Houses do not explode from decompression in a tornado and opening a window actually increases the danger.



45th Space Wing Shuttle Launch Weather Officer Kathy Winters reviews Tropical Storm Fay's effects during hurricane awareness training in the Training Auditorium on June 1. The storm closed Kennedy for several days in August 2008.

Step No. 2, Stay Informed: The 45th Weather Squadron signals the potential for severe weather at Kennedy Space Center and Cape Canaveral Air Force Station in their daily 24-hour and weekly planning forecasts, which are available at **www.patrick.af.mil**.

If a threat continues, the squadron issues a severe-weather watch with a desired lead time of four hours. If tornadoes are imminent or observed, they issue a tornado warning with a desired lead time of five minutes. If you receive a warning, follow local adverse weather procedures.

The National Weather Service in Melbourne gives the potential for severe weather in its general forecasts, issues a tornado watch when conditions are likely to produce tornadoes, and issues a tornado warning when one has been detected.

At home, purchase a NOAA All Hazards Radio and sign up for a text-message or e-mail alert service for your cell phone and keep both devices by your bed.

When it comes to lightning safety on center, listen for the following advisories.

See **SEASON**, Page 8

From **LUNABOTICS**, Page 3

have little or no opportunity to put their theoretical learning into practice.

"In engineering, theory and practice must be developed together," Reinholtz said.

Team AETHER said they already are planning for next year's competition.

Other winners were Team Pumpernickel of Auburn University for the systems engineering paper; team A.R.T.E.M.I.S. of Western Kentucky University for the slide presentation; and iDigU of the University of Southern Indiana for team spirit.

NASA/Jack Pfaller

The "M.U.L.E. Team" from Montana State University accepts a check for its lunabot, which came in first place at NASA's first Lunabotics Mining Competition. Center Director Bob Cabana, left, Joe Kosmo, a senior project engineer at Johnson Space Center, and Exploration Systems Mission Directorate Education Lead Jerry Hartman, back right, attended the ceremony at Kennedy's Apollo/Saturn V Center on May 28.

"Our goal was for it to be an event that the students would remember for the rest of their lives. The icing on the cake was giving the students the opportunity to view the STS-132 landing and the Delta IV launch," Murphy said.

The mining competition is a NASA Exploration Systems Mission Directorate project designed to engage and retain students in STEM fields. It also provides a competitive environment which may result in innovative ideas and solutions that could be applied to actual lunar excavation for NASA.

Rob Mueller, head judge and chief of the NASA KSC Surface Systems Office, said the teams displayed a variety of unique and innovative designs.

"The judges were very impressed by the high level of technical skills displayed by all the students and especially by the outstanding sportsmanship," Mueller said, "which included competitors giving each other spare parts."

Remembering Our Heritage

Astronaut took first U.S. spacewalk 45 years ago

By Kay Grinter
Reference Librarian

In 1965, the space "race" was not about speed but walking -- spacewalking, that is.

Cosmonaut Aleksey Leonov stepped outside his Voskhod 2 spacecraft on March 18 to make the first extravehicular activity, known in space jargon as an EVA. NASA astronaut Edward White was in hot pursuit, exiting his Gemini 4 capsule on June 3 on the first-ever EVA in the American space program.

White and crewmate James McDivitt left the starting gate at 11:16 a.m. EDT on June 3 from Launch Complex 19 at Cape Canaveral Air Force Station aboard a Titan II rocket.

After attempts to rendezvous with the rocket's second stage were unsuccessful, White journeyed outside the capsule -- hoses hooked up and zip gun in hand.

Oxygen was fed to his spacesuit by a 25-foot umbilical connected to a chest-mounted pressure regulator and ventilation assembly.

The design of the Gemini spacesuit provided improved arm and shoulder mobility compared to the Mercury suit. Instead of fabric-type joints, the Gemini suit used a pressure bladder covered by a link-net restraint layer that made the whole suit flexible when pressurized.

The net layer served as a structural shell, similar to the way a tire contained the pressure load of an inner-tube before the advent of tubeless tires.

White propelled himself away from the spacecraft with bursts from the zip gun, a compressed-gas maneuvering unit.

Radio listeners heard White describe his breath-taking view of Earth and how well he was feeling. When the planned 10-minute walk doubled in length, the Mission Control Center ordered him back inside the capsule.

"It's the saddest moment of my life," White said. The first U.S. EVA was finished in 21 minutes.

White reported that he found the experience exhilarating, an indication that he produced plenty of endorphins. His pulse -- 150 beats per minute at the beginning of the excursion -- rose to 178 just before he opened the hatch.

Former Shuttle Launch Director Bob Sieck was one of the Gemini spacecraft systems engineers responsible for the bio-medical instrumentation used on the mission.

"We took electrocardiogram and phonocardiogram measurements on all the Gemini astronauts, as well as recorded their respiration rates," Sieck said.

"A phonocardiogram records the sounds generated inside the body," Sieck further explained, "the same sounds a doctor would hear if he were examining a patient in his office."

The flight crew reported in their jump suits to a trailer at Pad 16, near the pad they were launching from. There, a team of medical technicians, bio-medical engineers and the flight surgeon were assembled. After the appropriate places on the astronauts' bodies were shaved, the team positioned and secured the sensors, installed the harness, and checked to determine they were working properly. They used equipment in the trailer that simulated the spacecraft umbilical and instrumentation system.

After a successful test, the astronauts put on their spacesuits, and the sensors were tested again. The team then reported to the blockhouse while the crew settled in their capsule on Pad 19.

"We never had a problem with the sensors or the equipment inside the suits that I can recall once they got in the spacecraft," Sieck said. "When you see a nurse on a hospital ward monitoring a dozen patients, remember that NASA's human spaceflight program developed the technology that we take for granted today."

The capsule splashed down in the Atlantic Ocean on June 7 after 97 hours and 56 minutes in space, ending the 62-orbit mission.

The astronauts in the Gemini Program spent a total of 12 hours and 12 minutes in nine of the 239 EVAs NASA astronauts have completed.

NASA file/1965

Gemini-Titan 4, or GT-4, lifts off June, 3, 1965, carrying astronauts James McDivitt and Edward White for a four-day mission. This flight included the first spacewalk by an American astronaut, performed by White.

NASA file/1965

Astronaut Edward White became the first American to step outside his spacecraft and let go, effectively setting himself adrift in the zero gravity of space on June 3, 1965. The visor of his helmet is gold plated to protect him from the unfiltered rays of the sun.

Upcoming events . . .

June 15 Kennedy is hosting its second annual KSC Olympics on June 15, from noon to 4 p.m. at KARS Park I on Hall Road on Merrritt Island.
To register, go to: **www.surveygizmo.com/s/300554/kscolympics2010**.
POC: Clay Yonce, **clayton.a.yonce@nasa.gov**

June 16 EAP is facilitating a Lunch and Learn for the Gay, Lesbian, Bisexual and Transgender, or GLBT, support group from 11:30 a.m. to 12:30 p.m. at the Occupational Health Facility Library.
POC: Patricia Bell, 861-8647 or **patricia.bell@nasa.gov**

June 24 KSC On-Site Job Fair in the SSPF and OSB II. Must register on **launchnewcareers.com** to participate. For more information, visit VOICE at **https://hrapps.ksc.nasa.gov/voice**.

June 25 Off-Site Job Fair at the Radisson Resort in Cape Canaveral. Must register on **launchnewcareers.com**. For more information, visit VOICE at **https://hrapps.ksc.nasa.gov/voice**.

June 26 The KSC Education Office is hosting a NASA Family Education Night from 6 to 10 p.m. at the Astronaut Hall of Fame.
POC: Beverly Davis, 867-3399, **beverly.davis@nasa.gov**

For more, go to the internal Kennedy Events and Schedules Calendar at **www.nasa.gov/centers/kennedy/events/index.html**

Looking up and ahead . . .

Targeted for July 30	Launch/CCAFS: Atlas V, AEHF 1; 8:05 to 10:05 a.m. EDT
To Be Determined	Launch/CCAFS: Falcon 9/Dragon C1, NASA COTS - Demo 1; TBD
Targeted for Sept. 16	Launch/KSC: Discovery, STS-133; 11:57 a.m. EDT
Targeted for Oct. 19	Launch/CCAFS: Delta IV Heavy, NROL-32; TBD
No earlier than late-November	Launch/KSC: Endeavour, STS-134; TBD
Targeted for Nov. 17	Launch/CCAFS: Atlas V, GPS IIF-2; TBD
Nov. 22	Launch/VAFB: Taurus, Glory; TBD
Targeted for Nov. 11	Launch/CCAFS: Falcon 9/Dragon C2; TBD
Targeted for Jan. 22, 2011	Launch/CCAFS: Atlas V, SBIRS GEO-1; TBD
Aug. 5, 2011	Launch/CCAFS: Atlas V, Juno; TBD
Aug.15, 2011	Launch/Reagan Test Site: Pegasus, NuSTAR; TBD
Sept. 8, 2011	Launch/CCAFS: Delta II Heavy, GRAIL; TBD
To Be Determined	Launch/VAFB: Delta II, Aquarius / SAC-D Satellite; TBD
To Be Determined	Launch/VAFS: Delta II, NPP; TBD

From **SEASON**, Page 6

Phase-1, Lightning Watch: Issued up to 30 minutes before lightning is expected to occur within 6 miles of the specified location. This means lightning is close enough to be a reasonable threat

Phase-2, Lightning Warning: Issued when lightning is imminent or occurring within 6 miles of the specified location.

When off-base, remember the following levels of lightning safety.

Level No. 1, Avoid the hazard: The National Weather Service Graphical Hazardous Weather Outlook is issued each morning and includes a map indicating where lightning will most likely occur during the next 24 hours. To view the daily lightning forecast, go to **www.srh.noaa.gov/mlb/**, and choose "Local" beneath the "Current Hazards" title from the left-side menu.

Level No. 2, Know when and where to go: Watch the skies for signs of approaching or locally developing thunderstorms. If you hear thunder, the storm is getting close enough to be a danger -- go to a safe place immediately. When indoors, stay away from conducting paths to the outside, such as corded, electrical appliances and wiring, and plumbing.

Level No. 3, Risk reduction: If you must be outside with thunderstorms in the area, you are in danger. Only do this if there is no alternative. You can reduce your risk, but not eliminate it by avoiding tall isolated objects, and elevated and wide-open areas, such as sports fields and beaches. Open small structures, such as pavilions and rain shelters provide no lightning protection.

Level No. 4, First aid: All lightning deaths are from cardiac arrest or stopped breathing at the time of the lightning strike. CPR or rescue breathing is the recommended first aid. Have someone call **911**, or **867-7911** if on base. If an Automated External Defibrillator, or AED, is available, use it on victims with cardiac arrest. If the cardiac arrest is due to fibrillation, the AED works much better than CPR. If it is not fibrillation, then the AED won't fire and you should resume CPR.

William P. Roeder of the 45th Weather Squadron contributed to this article.

More information

Local Recorded Hurricane Status Line:	861-7900 or 867-3900
Toll-free Recorded Hurricane Status Line:	866-572-4877 (KSC-HURR)
Hurricane Preparedness Training:	861-0978 or 861-3607
Emergency Operations Center:	867-9200 or 867-9201
Emergency Operations Center Web site:	http://eoc.ksc.nasa.gov/

Weather safety training is available from the 45th Weather Squadron by calling 321-494-7426 or e-mailing **45wscc@patrick.af.mil**.

John F. Kennedy Space Center

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